

Impact of Demonetization Process on the Performance of Nifty

Prof. Mohd. Shamim

Department of Commerce, Aligarh Muslim University, Aligarh, 202001, UP, India

Received: 12.06.2021 • Accepted: 18.06.2021 • Published: 30.06.2021 • Final Version: 30.06.2021

Abstract: This paper investigates the impact of demonetization process on the performance of Nifty 50 and its Sectorial Indices. The study uses data of closing prices from 28 June 2016 up to 20 March 2017. The study employs descriptive statistics, paired sample T test and ANOVA to evaluate the impact of demonetization process on the performance of Nifty 50 and its Sectorial Indices. It has found that there is statistical significance at the level of 5% that Nifty 50 dropped after the demonetization event as compared to the pre demonetization event. Further, the results reveal that most of Sectorial Indices of Nifty 50 sloped downward post demonetization event and the significance of the statistical results are varied from one sector to another. It is recommended that periodic review of the policy should be made to iron out the negative impacts of demonetization. Also, it is imperative to evaluate the impact of demonetization on the short, medium, and long run to avoid any grey areas for any future policy regarding cashless economy or demonetization.

Keywords: Demonetization, Cashless, NSE, Nifty, Sectorial Indices.

1. Introduction

On 31 March 2016, the annual report of Reserve Bank of India declared that total bank notes in circulation is Rs.16.42 lakh crore (US\$240 billion). Nearly 86% of the notes (i.e. Rs. 14.18 lakh crore (US\$210 billion)) was 1000 and 500 rupee notes (Singh & Singh, 2016). On November 8, 2016, the government announced that except for a few specified purposes, the two largest denomination notes, Rs 500 and Rs 1000, were “demonetized” with immediate effect, ceasing to be legal tender. Restrictions were placed on the convertibility of the ceased notes, bank deposit and cash withdrawals. The ceased notes were to be deposited in the banks by December 30, 2016 (Government of India, Ministry of Finance, Department of Economic Affairs, 2017). The proposal by the government aimed to elimination of ceased notes from circulation and replacement them gradually with a new set of note (National Institute of Public Finance and Policy New Delhi, 2016). The aim of the action was fourfold: to curb corruption; counterfeiting; the use of high denomination notes for terrorist activities; and especially the accumulation of “black money”, generated by income that has not been declared to the tax authorities (Government of India, Ministry of Finance, 2017).

Despite of huge increase in plastic cards and digital transactions in recent years, the currency in circulation as a proportion of GDP (gross domestic product) in India is the highest among emerging economies. The currency-GDP ratio stood at 10.6% at the end of March 2016, the highest in 16 years. In fact, India has the highest currency-GDP ratio among BRICS (Brazil, Russia, India, China, and South Africa) nations (M Allirajan, 2017). Accordingly, that demonization event which took place on 8 November 2016 may affect many aspects of the Indian economy as India depends on cash economy and the currency-GDP ratio is high compared to other countries.

Indian stock market has gained the interest of investors investing in two main stock market named as Bombay Stock Exchange (BSE) and National Stock Exchange (NSE). The Sensex and NIFTY are two such prominent market indices that function within the Indian stock market. These two market indexes represent the stocks for BSE (Bombay Stock Exchange) and NSE (National Stock Exchange) respectively (Bhardwaj, Narayan, Vanraj, Pawan, & Dutta, 2015). The NIFTY 50 is a diversified 50 stock index accounting for 13 sectors of the economy. It is used for a variety of purposes such as benchmarking fund portfolios, index based derivatives and index funds. It represents about 65% of the free float market capitalization of the stocks listed on NSE as on March 31, 2016. Its total traded value constituents approximately 46% of the traded value of all stocks on the NSE for the last six months ending March 2016 (NSE, 2017). So there is a need to investigate the impact of demonetization process by using these very important index i.e Nifty 50.

Review of related literatures show lack of comprehensive empirical studies regarding the impact of demonetization process on the stock markets in India since the introduction of the Cashless economy policy on 8 November 2016. Further, with dearth of imperial studies on the impact of demonization on many aspects of the Indian economy; academic research has not yet covered the impact of demonetization on the Indian economy. Majority of studies conducted in India to investigate the impact of demonization are descriptive and theoretical studies. Few studies conducted on the impact of demonization in some other countries like Nigeria, Brazil, and some other countries but the results of these studies can't be drawn to the Indian scenario as India has its own specific factors.

This study aims to investigate empirically the impact of demonetization process on the stock market in India represented by Nifty 50. In order to explore the impact of demonetization process on Nifty 50 and its sectorial indices, this paper is organized as follows. Section two demonstrates the literature review. Section three provides the objectives of the study. Section four presents the hypotheses of the study. Section five outlines the methodology. Section six discusses the descriptive statistics and results of the empirical tests. Section seven concludes and presents the implications and limitations of the study.

2. Literature Review

Chelladurai & V.Sornaganesh (2016) theoretically studied the impact of demonetization on many aspects including; society, Stock market, Non-Banking Finance Companies, Professionals, e-commerce Industry, FMCG and on SME. The study concluded that demonetization was a good move which will have a large impact on India and will reduce black money, but some challenges faced by citizens due to demonetization process. Similarly, National Institute of Public Finance and Policy, New Delhi (2016) in a working paper of Impact demonetization on the Economy sated that it is imperative to evaluate the short run and medium- term impacts that such a shock is expected to have on the economy. Further, Kaur (2017) studied the impact of demonetization on cashless payment system, electronic payment system. The study concluded that demonetization affects the economy through the liquidity side. In the same quest, (Singh & Singh 2016) studied the impact of demonetization on Indian economy. The study discussed the experience of impact of demonetization in some countries, and on Indian economy. The study stated that probable consequences of the demonetization, if the money finds its way in the economy it could have a meaningful impact. The study also argued that experiences from different countries shows that the move was one of the series that failed to fix a debt-burdened and inflation-ridden economy.

Some studies conducted in Nigeria to assess the impact of cashless economy on different aspects. Ovat (2012), Mieseigha & Ogbodo (2013), Ejiofor & Rasaki (2012), and Odior & Banuso (1857) studied the benefits and challenges of cashless economy in Nigeria. They agree that the cashless economy has

a positive impact on economy development, and beneficial though it comes with high level of concerns over security and management of cost savings resulting from

its implementation. Further, they advocate that a positive and significant relationship between cashless economy and transparency, accountability and reduction cash-related fraud, but periodic review of the policy by the CBN to iron out grey areas; embarking on intensive awareness campaign and sensitization of the citizenry by the CBN; putting adequate security mechanisms in place to forestall fraudulent practices; making the public power supply work efficiently; and exempting cash lodgments and public holidays from cash management charges.

In another context, Emengini & Alio (2014) studied the impact of cashless economy on financial statement reporting. They found that Stakeholders in the financial statements of corporate entities place more credence on financial statements emanating from cashless-based economies because of its effect on reduced tax evasion, inflation and revenue leakages, easier to comply with auditing standards and effective performance of business transactions. Further, Bayero (2015) studied the impact of cashless economy on financial inclusion in Nigeria. The study revealed that awareness, consumer/user value proposition, and Infrastructure were found to have strong significant relationship with Financial Inclusion while Business Model of Financial Service Providers did not show any significant relationship with Financial Inclusion.

Some other studies conducted in different countries to assess the impact of cashless economy on many aspects (Adu 2016; Ezeamama et al. 2014; Osazevbaru & Yomere 2015; Muiyiwa et al. 2013; Olelewe & E. 2014; Matthew & Anyanwaokoro 2016; Okoye & Ezejiofor 2013; Muhibudeen & Haladu 2015; Worthington, 2014) They argue that the cashless policy offers immense benefits to the economy, banking sector, development of payment system, reduce cash related robbery thereby reducing risk of carrying cash, and attract more foreign investors to the country. But Prior studies conducted in India and some other countries have not yet investigated the impact of demonetization process on the stock markets.

Following is a table (1) summarizing some prior studies which investigated cashless economy and / or demonetization in India and some other countries.

Table 1. Literature Review on Demonetization and Cashless Economy

No	Studies	country	Journal	Variables	Sample			Methods And Applied Tests	Results
					Size	Time limit	Data		
1	(Chelladurai & V.Sornaganesh, 2016) Demonetisation, Unified Payment Interface & Cashless Economy	India	International Journal of Informative & Futuristic Research	impact of demonetisation on the society, Stock market , Non-Banking Finance Companies , Professionals , FMCG, SME sector, and e-commerce Industry	N.A	N.A	N.A	Descriptive and theoretical	Citizens faced some challenges due to demonetisation but it was a good move that may reduce black money and has huge impact on India.
2	(Singh & Singh, 2016) Impact of Demonetization on Indian Economy	India	International Journal of Science Technology and Management	experience of impact of demonetization in some countries, and on Indian economy, probable consequences of the demonetization	N.A	N.A	N.A	Graph and percentile	Demonetization could have a meaningful impact on India if the money finds its way in the economy
3	(Bayero, 2015) Effects of Cashless Economy Policy on Financial Inclusion in Nigeria: An Exploratory Study	Nigeria	Procedia -Social and Behavioral Sciences	Cashless Economy Policy; financial inclusion; electronic payment; payment infrastructure; awareness; customer value proposition; business mode	230	N.A	cross sectional survey	Descriptive statistics regression	Financial Inclusion have strong significant relationship with Awareness, Infrastructure and Consumer but there is no significant relationship with Business Model of Financial Service Providers
4	(National Institute of Public Finance and Policy New Delhi, 2016) Demonetisation : Impact on the Economy	India	National Institute of Public Finance and Policy, New Delhi	demonetization, cashless transactions, credit, tax evasion	N.A	N.A	N.A	Descriptive and theoretical	Short run and medium-term impacts which expected to affect the economy as a result of demonetization should be evaluated
5	(Worthington, 2014) The Cashless Society	Europe	International Journal of Retail & Distribution Management	plastic payment	N.A	N.A	N.A	Graph and percentile	a less cash society by plastic card will continue to grow in popularity throughout Europe
6	(Emengini & Alio, 2014) Cashless Economy and Financial Statement Reporting in Nigeria	Nigeria	European Journal of Accounting Auditing and Finance Research	Cashless, Financial system, Financial Reporting, Economy, Business Transaction	N.A	N.A	Questionnaire and oral interview	Z – test statistics and Chi-square &secondary	Stakeholders place more credence for financial statements emanated from cashless economy because they are more complied with auditing standards, effective performance of business transactions, more reduced tax evasion, and less revenue leakages.
7	(Adu, 2016) Cashless Policy and its Effects on the Nigerian Economy	Nigeria	European Journal of Business, Economics and Accountancy	Information Technology, Computer, Automated Teller Machine. positive and negative effects of cashless policy	N.A	N.A	N.A	Descriptive and theoretical	Electronic banking as it requires commitment of huge financial resources on telecommunication facilities, constant electricity and computer technology but it has a strong influence on the development of payment system.
8	(Kaur, 2017) Demonetization: Impact on Cashless Payment System	India	International Journal of Science Technology and Management	Demonetization, Electronic Payment System.	N.A	N.A	N.A	Descriptive and theoretical	Demonetization affects the economy through the liquidity side
9	(Ezeamama et al., 2014) The Impact of Central Bank of Nigeria Cashless Policy in Nigeria Economy	Nigeria	IOSR Journal of Business and Management (IOSR-JBM)	Cashless economy, Cashless policy	500	N.A	Questionnaire	Graph and percentile Percentages	cashless policy may curb cash related corruption, reduce cash related robbery, therefore decrease risk of carrying cash, attract more foreign investors, increase employment
10	(Osazevaru & Yomere, 2015) Benefits and Challenges of Nigeria's Cash-Less Policy	Nigeria	Kuwait Chapter of Arabian Journal of Business and Management Review	Economic reforms, Banking sector, Payment channels, ATM, Payment terminal	N.A	N.A	secondary data	Descriptive and theoretical	Cash-less policy offers huge benefits to the banking sector whereas income based on cash-less setting is higher than in cash based arrangement
12	(Muyiwa et al., 2013) Impact of Cashless Economy in Nigeria	Nigeria	Greener Journal of Internet,	Cashless economy, Cashless policy	500	N.A	Questionnaire	Descriptive statistics	cashless policy may curb cash related corruption, reduce cash related robbery, therefore decrease risk of

			Information and Communication Systems				regression	carrying cash, attract more foreign investors, increase employment	
13	(Olelewe & E., 2014) Challenges Facing the Sustainability of Cashless Policy towards the Management of the Family Economy among Staff and Students of University of Nigeria, Nsukka, Chijioko	Nigeria	Educational Research International	Cashless policy, challenges, economic development, mobile and internet banking	490	N.A	Questionnaire	Descriptive statistics One-way ANOVA	Poor interconnectivity of network servers as a major challenge for efficient using of mobile banking services and some other several challenges such as 'insecurity of personal data and online frauds still facing banks' customers which results to delay in payment.
14	(Ovat, 2012) The Central Bank of Nigeria's Cashless Policy in Nigeria: Benefits and Challenges	Nigeria	Journal of Economics and Sustainable Development	Cashless Policy, Central Bank of Nigeria.	N.A	N.A	secondary data	Descriptive and theoretical	periodic review of the policy to iron out the thorny issues
15	(Mieseigha & Ogbodo, 2013) An Empirical Analysis of the Benefits of Cashless Economy on Nigeria's Economic Development	Nigeria	Research Journal of Finance and Accounting	Cash-based economy, Cashless economy, Economic development, E-payment.	468	N.A	questionnaires	Chi-square and (ANOVA) tests	Positive impact and significant relationship found between cashless economy and economy development from one hand and accountability, transparency, and reduction cash-related fraud from the other.
16	(Ejiofor & Rasaki, 2012) Realizing the Benefits and Challenges of Cashless Economy in Nigeria: IT Perspective	Nigeria	International Journal of Advances in Computer Science and Technology	ATM, Cashless, Electronic payment systems, Internet Banking	N.A	N.A	secondary data	Descriptive and theoretical	Despite cashless risks and glaring bottlenecks; consumers are ready to embrace the new policy of cashless economy
17	(Matthew & Anyanwaokoro, 2016) Cashless Economic Policy in Nigeria: A Performance Appraisal of The Banking Industry	Nigeria	IOSR Journal of Business and Management (IOSR-JBM)	Cashless policy, e-payment, Payment channels, ROA	N.A	2009-2014	secondary data	Paired Samples Test	While some benefits associated with cashless policy which include; reduced cash handling cost; reduced risk of cash related crimes, reduced revenue leakages and increased convenience but still some challenges were found which include; prevalence of e-fraud, infrastructural deficits, erratic power supply.
18	(Okoye & Ezejiolor, 2013) An Appraisal of Cashless Economy Policy in Development of Nigerian Economy	Nigeria	Research Journal of Finance and Accounting	cashless economy, financial stability, Policy development and Nigerian economy	68	N.A	questionnaire which	ANOVA and chi – square	Cyber fraud and illiteracy are major problems may hamper the implementation of the policy. Policy will help fight against money laundering, corruption, and reduce the risk of carrying cash.
19	(Muhibudeen & HALADU, 2015) The Impact of Cashless Policy Tools on Money Circulating Outside Nigerian Banks	Nigeria	International Journal of Business, Economics and Law	Cashless Policy, Automated Teller Machine, Web-Based Transactions, Mobile Banking Transaction, Point-of-Sale, Cheques and Currency in Circulation	N.A	2009-2012	Secondary	Descriptive statistics regression ANOVA	Cashless Policy tools does not affect currency circulation outside Nigerian banks
20	(Odior & Banuso, 2012) Cashless Banking in Nigeria: Challenges, Benefits and Policy Implications	Nigeria	European Scientific Journal	Cashless Banking, Nigeria, Policy Implications	N.A	N.A	Secondary	Graph and percentile Percentages	Cashless Nigeria seems to have some benefits though it face some concerns over security and management of cost savings resulting from its implementation

3. Objectives of the Study

The objectives of the study are:

- a- To study the impact of demonetization process on the performance of Nifty50 and its sectorial indices.
- b- To compare the impact of demonetization process among sectorial indices of Nifty50.

4. Hypotheses of the Study

Based on the literature review and objectives of the study demonstrated above, the hypotheses of the study are:

H01: There is no significant impact of demonetization process on the performance of Nifty50 and its sectorial indices.

H02: There is no significant difference of the impact of demonetization process among sectorial indices of Nifty50

5. Methodology

5.1. Data Collection and Sample

The study aims to investigate the impact of demonetization process on the performance of Nifty and its sectorial indices. It employs a historical data from Nifty 50 NSE and its components of its sectorial indices. Accordingly, secondary data represented by daily basis of closing price of Nifty 50 and its sectorial indices used for this study for three months period pre and three months post demonization event. The rationale behind this choice of time limit is to study the trend of closing prices of Nifty 50 and its sectorial indices pre and post demonetization event. Further, as the demonetization process announced by the government started from 8 November 2016 and strictly specified daily limits on withdrawals from ATMs and cash till January 16, 2017; the study extended the time limit to include all demonetization procedures.

5.2. Statistical tools and Methods

The study employs descriptive statistics and paired sample T test using E views 7 software to test the impact of demonization process on the performance of Nifty 50 and its sectorial indices pre and post demonization event.

6. Results and Discussion

6.1. Descriptive statistics

Table 2 Descriptive statistics of closing prices for pre and post event. There is a sharp fall of closing prices after the demonetization event. The minimum value of the closing price post demonization process was 7908.25 which is lower than the minimum value of pre demonization process; 8204. This value was found on 26 December 2016 which may due to the end of period for exchanging of old currency that announced earlier by the government. Further, the mean of closing prices post demonization process was 8451.2742 which is comparatively lower than the mean of closing prices pre demonization process; 8630.6466. Following is Table 2 Descriptive statistics of closing prices for pre and post event.

Table 2. Descriptive statistics of closing prices for pre and post demonization event

Index	Period	N	Mean	Median	Maximum	Minimum	Std. Deviation
NIFTY	Pre	90	8625.06	8634.125	8952.5	8127.85	150.4385
	Post	90	8458.781	8394.75	9160.05	7908.25	361.3946
NIFTY Auto Index	Pre	90	9735.547	9881.675	10458.65	8618.85	462.7495
	Post	90	9472.689	9629.225	10191.95	8681.6	412.6019
NIFTY Bank Index	Pre	90	19207.43	19294.98	20426.2	17561.55	603.2667
	Post	90	19307.32	19077.45	21249.9	17655.55	1073.056
NIFTY energy Index	Pre	90	9546.246	9538	10201.65	8512.9	411.3213
	Post	90	10492.26	10458.95	11573.85	9657.8	563.7843
NIFTY Financial Services Index	Pre	90	7898.667	7935.425	8385.85	7157.25	256.7424
	Post	90	7796.405	7627.325	8601.15	7175.35	417.1547
NIFTY FMCG Index	Pre	90	22010.44	21999.88	23186.15	21195.9	435.2032
	Post	90	21359.1	21215.33	23500.25	19592.85	1104.791
NIFTY IT Index	Pre	90	10599.91	10530.8	11222.2	9809.75	385.6876
	Post	90	10212.44	10198.53	10900.75	9434.6	377.0811
NIFTY Media Index	Pre	90	2850.796	2860.925	3127.8	2524	133.6936
	Post	90	2774.462	2747.425	3113.8	2493.8	188.8761
NIFTY Metal Index	Pre	90	2523.703	2541.275	2781	2115.85	146.6302
	Post	90	2905.716	2935.1	3189.4	2536.2	192.6657
NIFTY Pharma Index	Pre	90	11527.99	11561.08	11936.65	10606	236.5773
	Post	90	10570.92	10561.25	11132.05	9889.3	271.0782
NIFTY Private Bank Index	Pre	90	10784.63	10779.48	11501.2	9887.9	309.5088
	Post	90	10685.56	10537.75	11786.7	9743.15	613.7194
NIFTY PSU Bank Index	Pre	90	3035.278	3078.325	3323.35	2693.2	159.0773
	Post	90	3191.288	3181.775	3450.45	2910.65	144.272
NIFTY Realty Index	Pre	90	206.4228	206.525	214.65	189.75	4.413699
	Post	90	179.3444	178.9	208	153.85	14.57299

To carry forward the analysis, following is a technical analysis of Nifty 50 and its sectorial indices:

6-1-1. Nifty 50

Figure 1 shows that there is a sharp decrease of closing prices of Nifty 50 after the demonetization event which took place on 8 November 2016. The closing prices post demonetization event started to decrease from 9 November. On 8 November the price was 8543.55 ₹ but it fall to 8432 ₹ on 9 November. It continuously declined to reach the lowest level on 21 December 2016 which was 7908.25 ₹. Gradually, the closing price started to increase after 26 December which may due to relaxation of the period and the messages sent by the government to control the demonetization process.

6-1-2. Sectorial Indices of Nifty50:

6-1-2-1. Nifty Auto Index:

Figure 2 shows the trend of closing prices of the Automobile sector of Nifty 50. The closing prices started to decrease after 8 November 2016 but the index started to increase after 28 December 2016.

6-1-2-2. Nifty Bank Index:

As shown in figure 3, differently from other sectorial indices of Nifty 50, the Bank sectorial index increased after 8 November 2016 and continue to increase for two days after demonetization event. Overall the index slightly decreased after three days of demonetization announcement and continue to decrease slightly till the end of Jan. 2017. From 27 January 2016, the index recovered its prices and started increasing.

6-1-2-3. Nifty 50 Energy Index:

Figure 4 shows the trend of Nifty 50 Energy index closing prices. It shows that Energy index slightly decreased. Similarly to Bank index, Nifty 50 Energy index closing prices increased after 8 Nov. 2016 and continue to increase for two days after demonetization event but it recovered its prices on 28 Nov. 2016. Since then, the index started to gain till the end of the period of this study except in two days at the end of November which decreased slightly.

6-1-2-4. Nifty Financial Services Index:

As shown in figure 5, Nifty Financial Services index had both increasing and decreasing trend in the pre demonetization event, but after post demonization the index started to decrease from 8093 ₹ on 10 Nov 2016 to 7917 ₹ on 31 Jan. 2017. On the next trading day; 1 Feb. 2017 the index started to gain which reached to a peak point of 8601 ₹ during the period of this study.

6-1-2-5. Nifty FMCG:

Comparing the minimum and maximum closing prices of Nifty FMCG during pre and post demonetization, it is notably to mention that the minimum value in the pre demonetization period was 21196 ₹ against 19592 ₹ in the post demonetization period. Similarly, the maximum prices in the pre demonization was 23186 ₹ against 23500 ₹ in the post demonization. The index had slight decrease after demonization but it has composed its prices especially at the end of December 2016. Figure 6 illustrates the trend of Nifty FMCG.

6-1-2-6. Nifty IT:

Differently from other indices of Nifty 50, comparing the minimum and maximum closing prices of Nifty IT during pre and post demonetization, it is worthy to notice that the minimum value in the pre demonetization period was 9809 ₹ against 9434 ₹ in the post demonetization period. Similarly, the maximum prices in the pre demonization was 11222 ₹ against 10900 ₹ in the post demonization. Accordingly, the closing prices in the post demonetization period are comparatively less than pre demonization. Figure 7 demonstrates the trend of Nifty IT.

6-1-2-7. Nifty Media:

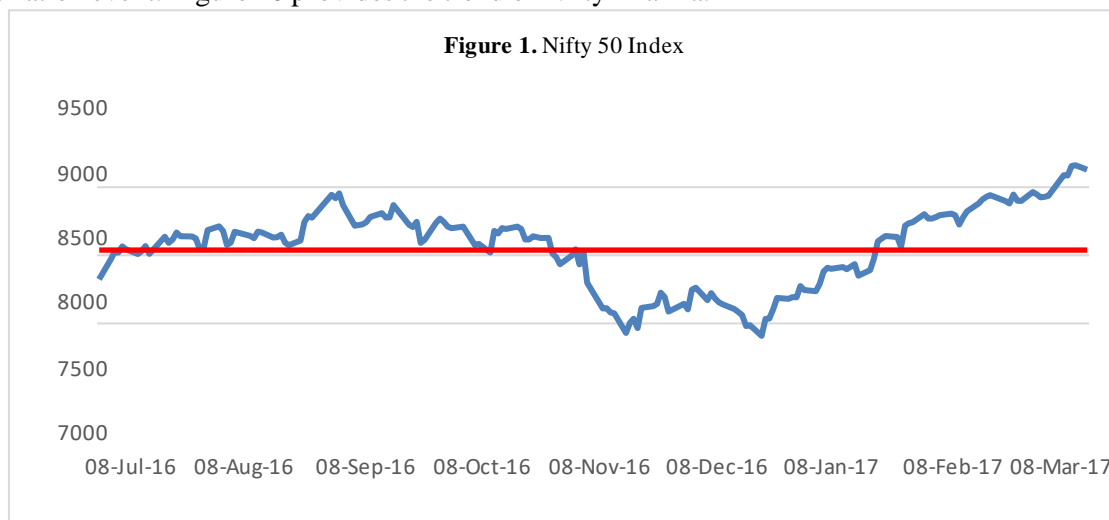
Figure 8 shows that Nifty Media has slight drop starting from 11 Nov. 2016 till 25 Jan. 2017. The index had the lowest value at the post demonization period which was 2494 ₹.

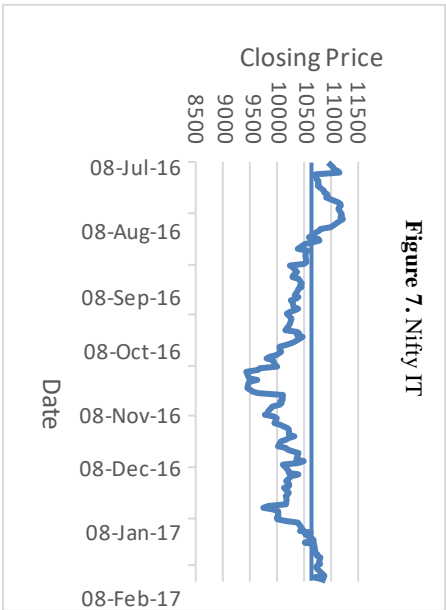
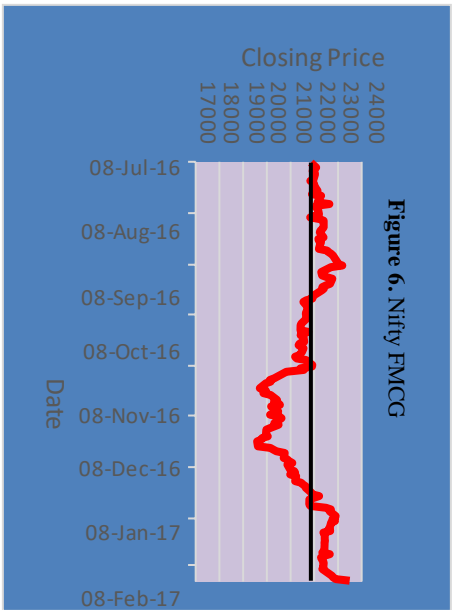
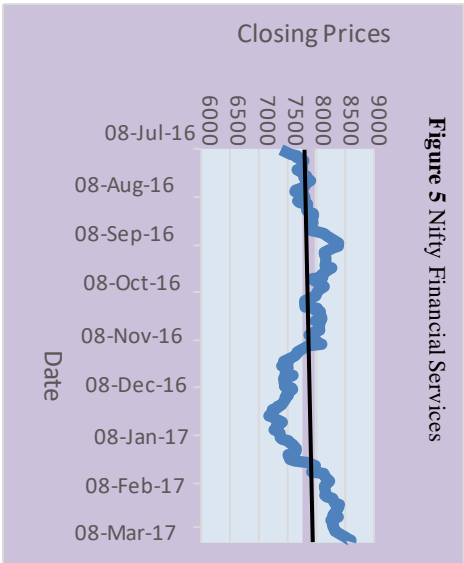
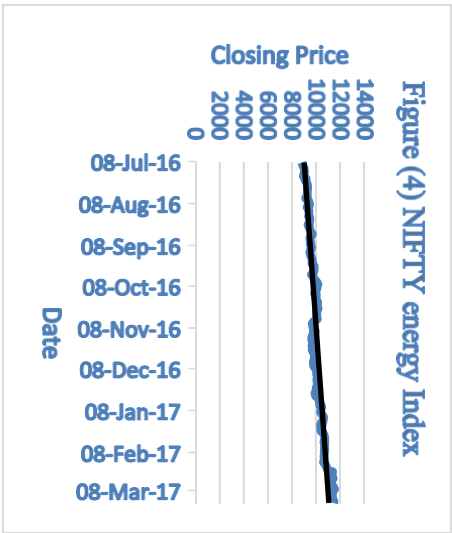
6-1-2-8. Nifty Metal:

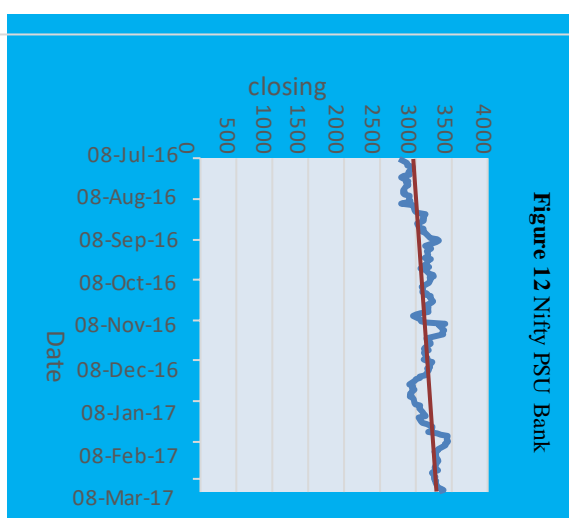
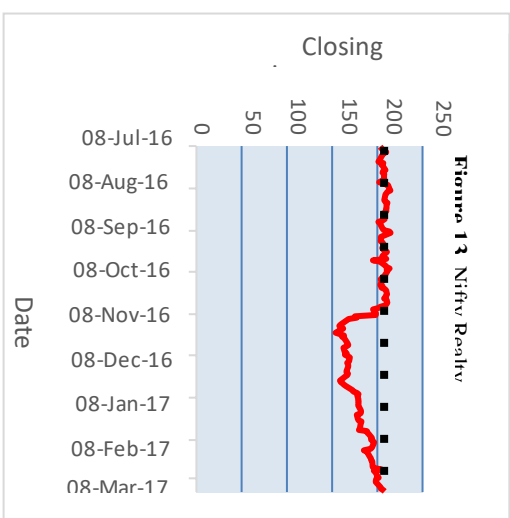
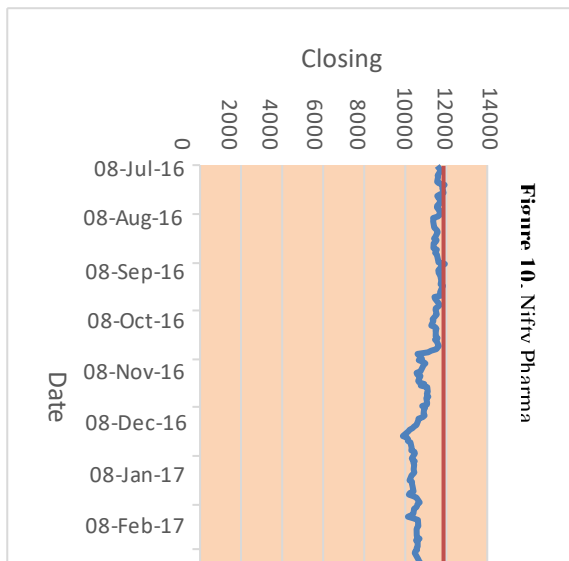
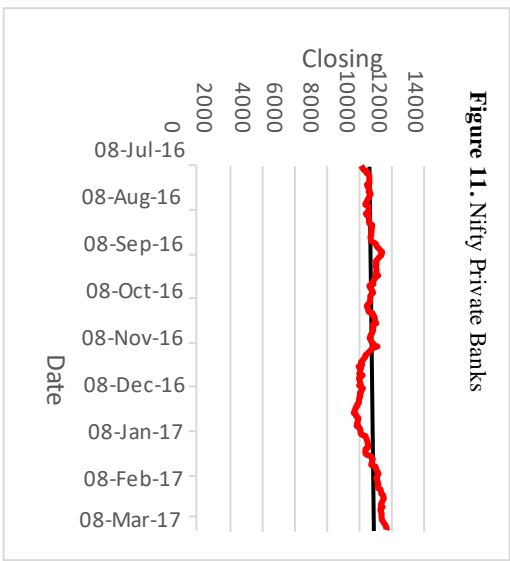
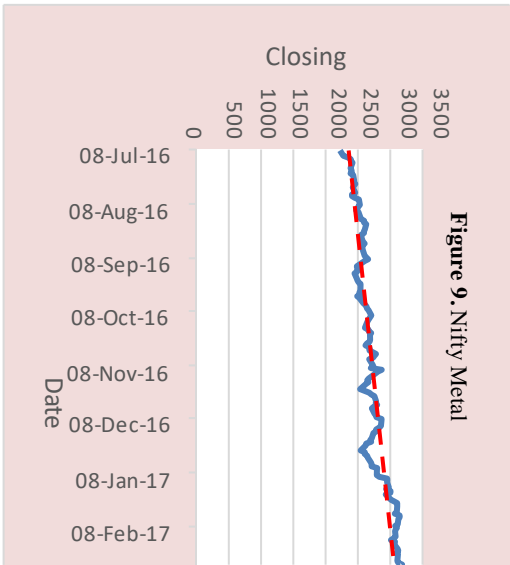
Figure 9 demonstrates that Nifty Metal did not change after demonetization event as compared to the pre demonetization event. The lowest price of the index was 2115 ₹ on 25 June 2016 against 2536 ₹ at the post demonetization event.

6-1-2-9. Nifty Pharma:

This index decreased from minimum 10606 ₹ at the pre demonetization event to 9889 ₹ at post demonetization event. Further, the index dropped from maximum 11937 ₹ at the pre demonetization event to maximum 11132 ₹ at post demonetization event. Figure 10 provides the trend of Nifty Pharma.







6-1-2-10. Nifty Private Banks:

Figure 11 shows a slight change in this index which decreased from minimum 9888 ₹ at the pre demonetization event to 9743 ₹ at post demonetization event but the index composed its losses and changed from maximum 11501 ₹ in the pre demonetization event to maximum 11787 ₹ in the post demonetization event.

6-1-2-11. Nifty PSU Bank:

Figure 12 illustrates that this index did not drop after demonetization. Rather than dropping, the index changed from minimum 2623 ₹ at the pre demonetization event to 2910 ₹ at post demonetization event and from maximum 3323 ₹ at the pre demonetization event to maximum 3450 ₹ at post demonetization event.

6-1-2-12. Nifty Realty:

Figure 13 shows a slight change in this index which decreased from minimum 190 ₹ at the pre demonetization event to 154 ₹ at post demonetization event. Further, it is decreased from maximum 215 ₹ at the pre demonetization event to maximum 208 ₹ at post demonetization event.

6.2. Paired sample T test

Table 3 demonstrates Paired sample T test of Nifty and its sectorial indices for pre and post demonetization event. The results reveal that there is a high significance level on the impact of demonetization on the closing prices of Nifty 50 post demonetization period as compared to the pre demonetization period. Irrespective of the impact of the other variables that may affect the closing prices of Nifty 50 after demonetization period, the results reveal that P value is less than 0.05 ($P < 0.05$) which is highly significant at the level of 95% confidence level. This result leads to reject the null hypothesis (H_0) which stated that "There is no significant impact of demonetization process on the performance Nifty 50 and its sectorial indices". The results have proved that there is a significant difference in the pre and post demonetization periods and demonetization event has left some impact on the stock market indices.

Table 3. Paired sample T test of nifty and its sectorial indices for pre and post demonetization event

Pre and post	Mean Diff.	S.D. of diff.	t-statistic	Prob.
Nifty post - Nifty Pre	-166.28	362.92	-4.35	0.0000
NIFTY Auto Index post - NIFTY Auto Index Pre	-262.86	321.45	-7.76	0.0000
NIFTY Bank Index post - NIFTY Bank Index Pre	99.89	1072.26	0.88	0.3792
NIFTY energy Index post - NIFTY energy Index Pre	946.01	283.62	31.64	0.0000
NIFTY Financial Services Index post - NIFTY Financial Services Index Pre	-102.26	424.68	-2.28	0.0247
NIFTY FMCG Index post - NIFTY FMCG Index Pre	-651.35	1327.14	-4.66	0.0000
NIFTY IT Index post - NIFTY IT Index Pre	-387.47	701.59	-5.24	0.0000
NIFTY Media Index post - NIFTY Media Index Pre	-76.33	150.31	-4.82	0.0000
NIFTY Metal Index post - NIFTY Metal Index Pre	382.01	156.56	23.15	0.0000
NIFTY Pharma Index post - NIFTY Pharma Index Pre	-957.06	361.97	-25.08	0.0000
NIFTY Private Bank Index post - NIFTY Private Bank Index Pre	-99.07	622.46	-1.51	0.1346
NIFTY PSU Bank Index post - NIFTY PSU Bank Index Pre	156.01	206.681	7.16	0.0000
NIFTY Realty Index post - NIFTY Realty Index Pre	-27.08	15.6015	-16.47	0.0000

6.3. Analysis of variance (Anova):

Table 4. Analysis of Variance of Nifty and its Sectorial Indices for Post Demonetization

Event

Test for Equality of Means Between Series

Date: 03/29/17 Time: 17:12

Sample: 6/28/2016 11/08/2016

Included observations: 90

Method	df	Value	Probability
Anova F-test	(12, 1157)	11557.25	0.0000
Welch F-test*	(12, 417.45)	42335.26	0.0000
Analysis of Variance			
Source of Variation	df	Sum of Sq.	Mean Sq.
Between	12	4.10	3.42
Within	1157	3.42	295849.4
Total	1169	4.14	35391569

From the above table the results indicate that the differences between the groups are 4.10 with a mean of 3.42 but the differences within the groups are 3.42 with a mean of 29585. The P value is less than 0.05 which leads to reject the Null hypothesis which stated that there is no significant differences among the sectorial indices of Nifty50.

7. Conclusion and Recommendations

The study aimed to investigate the impact of demonetization process on the performance of Nifty 50 and its sectorial indices. The study used pre and post demonetization historical data of Nifty from 28 June 2016 up to 20 March 2017. It Employed paired sample T test and descriptive statistics. The study found that Nifty 50 dropped after the announcement of demonetization. Further, the results reveal that P value of paired sample T test is less than 0.01 ($P < 0.01$) which is highly significant at the level of 99% confidence level. Furthermore, the results reveal that most of Sectorial Indices of Nifty 50 sloped down post demonetization event and the significance of the statistical results are varied from one sector to another. The study has recommended the following:

- 1- It is recommended that periodic review of the policy should be made to iron out the negative impact of demonetization.
- 2- It is imperative to evaluate the impact of demonetization on the short, medium, and long run to avoid any grey areas for any future policy regarding cashless economy.
- 3- Future studies may focus individually on the sectors of Nifty 50 to investigate deeply how demonetization affected every individual sector.

The study is limited to three months pre and tree months post demonetization period. Also, other variables have not been investigated in this study, it is only limited to the impact of demonetization process on Nifty 50 and its sectorial indices.

References

- [1] Adu, C. A. (2016). Cashless policy and its effects on the Nigerian economy. *European Journal of Business, Economics and Accountancy*, 4(2), 81–88.
- [2] Bayero, M. A. (2015). Effects of cashless economy policy on financial inclusion in Nigeria: An exploratory study. *Procedia -Social and Behavioral Sciences Global Conference on Business & Social Science*, 172, 49–56. <http://doi.org/10.1016/j.sbspro.2015.01.334>
- [3] Bhardwaj, A., Narayan, Y., Vanraj, Pawan, & Dutta, M. (2015). Sentiment Analysis for Indian Stock Market Prediction Using Sensex and Nifty. *Procedia Computer Science, 4th International Conference on Eco-Friendly Computing and Communication Systems Sentiment*, 70, 85–91. <http://doi.org/10.1016/j.procs.2015.10.043>
- [4] Chelladurai, M., & V.Sornaganesh. (2016). Demonetisation, unified payment interface & cashless economy. *International Journal of Informative & Futuristic Research*, 4(3), 5654–5662.
- [5] Ejiofor, V. E., & Rasaki, J. O. (2012). Realising the benefits and challenges of cashless economy in Nigeria: it perspective. *International Journal of Advances in Computer Science and Technology*, 1(1), 7–13.
- [6] Emengini, S. E., & Alio, felix C. (2014). Cashless economy and financial statement reporting in Nigeria. *European Journal of Accounting Auditing and Finance Research*, 2(3), 1–9.
- [7] Ezeamama, M. C., Joseph, N., Marire, M. I., & Mgbodile, C. C. (2014). The Impact of Central Bank of Nigeria Cashless Policy in Nigeria Economy. *IOSR Journal of Business and Management (IOSR-JBM)*, 16(12), 84–95.
- [8] Government of India, Ministry of Finance, D. of E. A. E. D. (2017). *Economic Survey 2016-17*.
- [9] Government of India, Ministry of Finance, Department of Economic Affairs, E. D. (2017). *Demonetisation: To Deify or Demonize? Economic Survey*.
- [10] Kaur, M. (2017). Demonetization : impact on cashless payemnt system. *International Journal of Science Technology and Management*, 6(1), 144–149.
- [11] M Allirajan. (2017). India's currency-GDP ratio highest among BRICS nations. *The Times of India*, <Http://timesofindia.indiatimes.com/business/india-business/Indias-Currency-GDP-Ratio-Highest-among-BRICS-nations/articleshow/55576351.cms>, p. retrived on 17/03/2017.
- [12] Matthew, O. M., & Anyanwaokoro, M. (2016). Cashless Economic Policy in Nigeria : A Performance Appraisal of The Banking Industry . *IOSR Journal of Business and Management (IOSR-JBM)*, 18(10), 1–17. <http://doi.org/10.9790/487X-1810030117>
- [13] Mieseigha, E. G., & Ogbodo, U. K. (2013). An Empirical Analysis of the Benefits of Cashless Economy on Nigeria ' s Economic Development. *Research Journal of Finance and Accounting*, 4(17), 11–16.
- [14] Muhibudeen, L., & HALADU, A. (2015). The impact of cashless policy tools on money circulating outside Nigerian banks. *International Journal of Business, Economics and Law*, 8(3), 47–52.
- [15] Muyiwa, O., Tunmibi, S., & A.T, J.-D. (2013). Impact of Cashless Economy in Nigeria By Impact of Cashless Economy in Nigeria. *Greener Journal of Internet, Information and Communication Systems*, 1(2), 40–43.

- [16] National Institute of Public Finance and Policy New Delhi. (2016). *Demonetisation : Impact on the Economy*.
- [17] Odior, E. S., & Banuso, F. B. (2012). Cashless banking in Nigeria : challenges , benefits and policy implications. *European Scientific Journal*, 8(12), 289–316.
- [18] Okoye, P. V. C., & Ezejiofor, R. (2013). An Appraisal of Cashless Economy Policy in Development of Nigerian Economy. *Research Journal of Finance and Accounting*, 4(7), 237–253.
- [19] Olelewe, C. J., & E., N. (2014). Challenges facing the sustainability of cashless policy towards the management of the family economy among staff and students of university of Nigeria, Nsukka Chijioke. *Educational Research Internationa*, 3(April), 56–65.
- [20] Osazevbaru, H. O., & Yomere, G. O. (2015). Benefits and challenges of Nigeria ' s cash- less policy. *Kuwait Chapter of Arabian Journal of Business and Management Review*, 4(9), 1–10.
- [21] Ovat, O. O. (2012). The Central Bank of Nigeria's Cashless Policy in Nigeria: Benefits and Challenges. *Journal of Economics and Sustainable Development*, 3(14), 128– 134.
- [22] Singh, P., & Singh, V. (2016). Impact of demonetization on Indian economy. *International Journal of Science Technology and Management*, 5(12), 625–635.
- [23] Worthington, S. (2014). The cashless society. *International Journal of Retail & Distribution Management*, 23(7), 31–40.